CLASS SPECIFICATION

TITLE	GRADE	EEO-4	CODE
SUPERVISOR III, ASSOCIATE ENGINEER	**40***	**B**	**6.209**
SUPERVISOR II, ASSOCIATE ENGINEER	**38***	**B**	**6.211**
SUPERVISOR I, ASSOCIATE ENGINEER	**36***	**B**	**6.215**

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

The following benchmark descriptions are representative examples of positions at various levels in several agencies, but they are not intended to be all-inclusive. Allocation of new or existing positions not described below must be determined by a review of the nature and complexity of work performed; the knowledge, skills and abilities required; independence/supervision received; scope of responsibility/consequence of error; authority to take action/decision-making; and personal contacts necessary to complete work.

SUPERVISOR III, ASSOCIATE ENGINEER

1) *Materials Division*

Roadbed Design, **Pavement Analysis**, and **Bituminous Operations:** Plan, organize, and manage the operations of a unit; establish priorities and direct and train personnel; represent the Materials Division at meetings and conferences; review and write technical reports and agreements for research projects; work with a variety of computer software to manipulate and organize data, improve the process of project prioritization, selection of binders in pavements, and optimize the design of a pavement structural section.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): **Detailed knowledge of:** material properties. **Working knowledge of:** soil, rock and material testing principles and techniques; soil engineering and dynamics. **Ability to:** locate project sites; obtain engineering characteristics of soil, rocks and materials; perform analysis of drilled shafts, soil slopes and landslide and rock fall mitigation; conduct geotechnical engineering analysis and design; subsurface sampling and testing.

2) *Road Design Division*

Roadway Design: Organize, plan and supervise design squads and assign roadway and transportation related projects, and ensure compliance with requirements of the State and the Federal Highway Administration; direct design squads in the proper application of policies and procedures and the correct interpretation of federal and State manuals and publications used in design. Select, interview, and recommend candidates for job vacancies; inform subordinates of changes in the design of projects; oversee on-the-job training of new employees; and approve leave requests. Maintain the project schedule throughout the design phase and review projects by checking project plans to ensure that all information is provided and compliant with standards. Prepare preliminary cost estimates and review project estimates created by subordinates and consultants. Respond to bid inquiries from contractors, provide construction support throughout the project's construction process, and organize, attend and conduct the post construction review. Prepare legal agreements with local entities, developers, private organizations, and citizens.

*** Reflects a 2-grade, special salary adjustment authorized by the 2001 Legislature to improve recruitment and retention.**

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR III, ASSOCIATE ENGINEER (cont'd)

2) ***Roadway Design Division*** (cont'd)

Roadway Design (cont'd)
ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of appointment): **Detailed knowledge of:** roadway construction plans. **Working knowledge of:** engineering drafting for roadway design. **Ability to:** modify and/or adapt new highway construction designs, procedures or methods; work and negotiate effectively with contractors.

CADD Management: Supervise the operation and staff of the CADD Management Section Design; manage and coordinate the development and maintenance of the Design Division's CADD Standards following established federal and State engineering policies and procedures; provide technical direction in the use of civil engineering software and associated workflow; coordinate the research and development of highly specialized and complex engineering software configurations and customization, workstation and server configurations, and the development of engineering support systems and applications; manage training in the use of complex engineering software by the engineering staff; oversee and perform the installation of civil design software and product enhancements; research, evaluate, coordinate and implement technological advancements in engineering software and hardware for the division and department; oversee and/or provide technical expertise to engineering staff in solving or troubleshooting engineering design and/or computer challenges; provide technical expertise and recommendations to the Roadway Design administration concerning implementation and long range planning for engineering software and support issues.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): **Working knowledge of:** Feature and Symbology Managers, CADD drawing and resource file types. **Ability to:** use MicroStation Workspaces and InRoads Preferences to develop construction plans and designs; communicate effectively with software vendors.

Specifications: Supervise a staff of Supervisor II and Staff II, Associate Engineers; assign contracts with appropriate advertising dates; schedule and ensure plans for all contracts are complete, accurate and the Special Provisions are written and comply with State and federal guidelines, regulations and laws. Ascertain Special Provisions include proper specifications and cover all materials, construction methods, method of measurement, and methods of payment on every roadway and/or bridge contract the State advertises. Schedule, coordinate and chair planning and specification review meetings annually, involving State, city, county, federal and private entities. Resolve problems and disputes as they arise. Assist Manager I in preparation of the division's yearly budget, and monitor payroll and travel expenditures. Interview, hire, train, develop and evaluate subordinate staff.

3) ***Safety/Traffic Division***

Traffic Design/Sign and Pavement Marking: Supervise staff and manage the design and review of sign layouts to ensure proper delineation is provided and that the color and placement meets established policies and procedures. Review and provide guidance on pavement marking layouts to the roadway designer; review traffic control plans for correct use and number of signs, barricades and delineators; perform capacity analysis to determine present and future needs pertaining to intersection and geometric design; and perform field reviews and inspections of sign installations and pavement markings to ensure proper placement and delineation and determine the visual impact to motorists.

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR III, ASSOCIATE ENGINEER (cont'd)

3) ***Safety/Traffic Division*** (cont'd)

Traffic Design/Sign and Pavement Marking (cont'd)
ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Working knowledge of: pavement markings and applications; sign usage and placement.

Traffic Design/Signal and Lighting: Supervise staff and manage the operation of the signal and lighting section; direct activities with local governments by reviewing and approving designs on State facilities required by State and local entities, including modifications to existing systems; ensure designs meet standards; and write interlocal agreements regarding engineering, construction, payments and schedules for signal and lighting installations. Direct interaction with consultant engineers by reviewing and approving designs on State facilities and those systems required of private citizens and developers where State roadway access requires construction of a signal system; and design traffic signal and lighting systems for inclusion in plans and specifications. Review and research new technology and new signal and lighting products, power sources and supplies; provide information to the department's Research Evaluation Committee on products to be tested for State use.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Detailed knowledge of: federal, State and department rules, regulations, laws, policies and procedures regarding the design, construction, operation and maintenance of traffic signal and lighting systems. **Working knowledge of:** the current National Electric Code regarding all phases of construction, maintenance and powering of signal and lighting systems. **Ability to:** research issues and prepare recommendations using federal and State laws, regulations, policies, industry manuals and specifications; prepare interlocal signal and lighting system agreements with county and city officials.

4) ***Construction Division*** – Supervise the work of Associate Engineers; audit contractor work records and process payments to contractors; ensure contract change orders comply with guidelines set by the State and Federal Highway Administration (FHWA); track interlocal agreements to ensure local entities are billed for work performed by NDOT; ensure contract crews close out contracts according to State and federal guidelines; solve documentation and payment problems and maintain NDOT Construction Manual and Documentation Manual.

5) ***Districts*** - Plan and organize the work and training of professional and technical employees engaged in surveying, inspection, and testing of materials to ensure adherence to contract plans and specifications; direct changes to the contract plans and specifications through an approved contract change order or supplemental agreement; manage the construction field office; authorize payments to the contractor for items of work and materials that meet specifications and quality control requirements; reject non-specification materials and/or work and assess liquidated damages for materials and working day; and monitor contractor workforce wage rates to ensure compliance with federal and State wage and salary regulations. Coordinate contractors' scheduling of personnel with department staff and construction activities and prepare written correspondence to notify divisions within the department and contractors of all pertinent construction activities. Work directly with contractors, the public, NDOT personnel and elected officials as a project is constructed. Plan whole crew assignments, including supervisors to coordinate with contractor's schedule. Authorize payment to the contractor for work performed and attend project meetings. Participate in final inspections when the contractor has completed contractual requirements in substantial compliance

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR III, ASSOCIATE ENGINEER (cont'd)

5) *Districts* (cont'd)
with contract plans and specifications; prepare final estimate of quantities and materials; research and prepare documentation to support the department's position on claims filed against the contract; represent the department at the Claims Review Board and testify in court when necessary.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application)
Ability to: supervise a construction crew; modify and or adapt standard construction designs procedures or methods.

SUPERVISOR II, ASSOCIATE ENGINEER

1) *Environmental Services Division*

Air Quality Section: Schedule, organize, plan and supervise the operations and staff of the air quality monitoring program; supervise or perform field surveys of project areas to determine suitable air quality monitoring sites; assemble project-related information to be utilized as computer modeling inputs; supervise or perform air quality impact modeling of selected projects to determine vehicle composite emission factors and carbon monoxide concentration levels representing the worst-case air quality impacts at the modeled sensitive receptor sites; write air quality technical reports, project-related air quality impact summaries, and conclusion statements; review material site construction applications to determine the type and quantity of air pollution emissions resulting from the proposed sand and gravel processing operations and transporting agreement with consultants and other governmental agencies to provide air quality-related services; monitor and review the work performed by consultants; and audit consultant billings for services relative to evaluating project-related air quality impacts.

Noise Section: Supervise the section's staff and operations by planning and scheduling noise tasks; review environmental documents of consultants to ensure compliance with policies; establish operating procedures and supervise the use of data gathering equipment; perform field studies to determine scope of project; determine need for collection of data and equipment necessary for completion of the project; determine dates and times of field monitoring of existing noise in the proximity of new or modified roadways to provide valid data for conclusions and noise reports; and supervise the field survey of the project. Prepare noise reports including conclusions, recommendations, tables and graphics for inclusion in environmental documents to obtain environmental clearances; and distribute reports to supervisors, consultants and other agencies.

Hazardous Material/Waste Section: Supervise the staff and hazardous material/waste operations at department facilities; ensure compliance with policies and recommend corrective action when needed; prepare and revise the department's Hazardous Waste Transportation Policy; supervise maintenance of the hazardous waste recordkeeping system; prepare reports and documents regarding hazardous materials and waste for presentation to federal, State and local agencies, department personnel and the general public including annual waste report and tax report from generators of waste, status reports, clearance requests and waste profiles; assist in the selection, contract development and negotiations for consultants to provide professional expertise on hazardous waste related activities; oversee consultant operations; and train employees in the proper handling of hazardous waste. Perform site assessments and/or respond to hazardous material waste spills on property that the department owns or may acquire for future highway projects.

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR II, ASSOCIATE ENGINEER (cont'd)

1) *Environmental Services Division* (cont'd)

Hazardous Material/Waste Section (cont'd)
ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Working knowledge of: civil and environmental engineering with emphasis on highway design, construction, and maintenance to evaluate pollution impacts on environment; chemistry and physics to analyze and implement practical application of environmental impacts; regulations that govern hazardous waste, air quality and noise pollution; Occupational Safety and Health Administration regulations.

2) *Materials Division*

Asphalt Lab, Bituminous Design, Concrete and Steel, Lab Services, Roadbed Aggregates, Material Site Operations and Geotechnical Lab: Supervise a unit of professional and technical staff; plan and organize testing to conform to division goals and objectives; prioritize the testing to ensure smooth and efficient work flow; direct lab personnel in the type of testing to ensure each sample is tested according to specifications; review and evaluate engineering calculations; coordinate the section's inventory to maintain necessary quantities of equipment and supplies; and participate in program and specification development. Direct research activities by assigning personnel to conduct independent laboratory testing to determine engineering properties of materials and mixes. Inspect and evaluate materials that do not conform to expected results to determine the probable cause; provide information and make recommendations to engineers in the field and contractors regarding the types and approved use of materials; review plans and specifications before and after the award of contracts to ensure the quality of materials; and review test methods to select the best way to evaluate materials.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Working knowledge of: Material Safety Data Sheets; physical and engineering characteristics and testing procedures of soil and materials; proper operating procedures and the capabilities of equipment; field surveying equipment and techniques; geological and topographical maps.

3) *Road Design Division*

Roadway Design: Supervise a design squad and perform tasks involved in the design of roadway and transportation related projects; determine the type and scope of the project; conduct alternative and preliminary design field studies; identify minimum requirements for the project; set design geometrics by application of various design standards and guidelines, established practices and sound engineering judgment; set roadside design elements; develop traffic control plans and construction staging to provide a safe construction zone for motorists and workers and to expedite traffic flow through the construction work site; develop a striping plan; verify and/or calculate quantities of earthwork, base and surface, drainage items and traffic control, so that all items can be accounted for and accurately estimated; prepare information for public hearings; establish limits or right-of-way required for a project; design or modify special details when standard drawings are insufficient to address project needs; perform tasks involved in the compilation of contract data; prepare engineer's preliminary and agreement estimates; compile and incorporate data and plan sheets from other divisions, sections, and consultants, and review the content for accuracy for inclusion in contract plans.

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR II, ASSOCIATE ENGINEER (cont'd)

3) ***Road Design Division*** (cont'd)

Specifications: Supervise and coordinate activities of the Staff Associate(s) responsible for quality assurance. Analyze contract plans and items of work involved to determine construction limitations and prepare specifications for items of work for the Special Provisions not covered in the Standard Specification. Compile and write special provisions describing project restrictions or requirements, scope of work, materials required, construction processes and project milestones, methods of measurement and basis of payments, and special provisions for advertised bids.

4) ***Safety/Traffic Division***

Railroad Safety Engineering: Manage programs related to railroad safety engineering by supervising the compilation of raw statistical data from various sources to include field data to establish statewide railroad crossings; prepare preliminary investigative reports to include design and operational characteristics for the improvement of hazardous safety conditions; perform preliminary engineering work using standard engineering methods to establish quantities and costs; conduct joint multi-disciplinary diagnostic reviews and make recommendations for improvements; participate in final inspection and contract acceptance to ensure projects are completed in accordance with State and federal standards; and submit applications for authority to alter railroad crossings and present testimony before the Nevada Public Utilities Commission. Coordinate activities between the Federal Railroad Administration and the department concerning local rail state assistance projects during construction; keep billing records and authorize payments. Supervise a working records management system and retrieval process for all project documents, standards, and technical information related to the Railroad Safety Section.

Statewide Safety Engineering: Serve as the project coordinator for the Hazard Elimination Program and the Federal Highway Administration Section 402 Safety Program. Prepare design plans for fence projects by conducting pre-design field review; determine necessary environmental, right-of-way, and other clearances; prepare engineering estimates and establish required quantities of materials; negotiate and draft agreements pertaining to cost sharing, maintenance and other facets of construction; prepare plan sheets and determine special details; and direct the purchase of materials. Conduct safety studies by evaluating, interpreting and verifying accuracy of traffic accident data; develop costs that relate dollar values to average property damage losses, potential earning power, and costs related to medical care, insurance, inflation, funerals, and allied services; develop engineering countermeasures to reduce and/or eliminate specific accident causes; and provide engineering estimates and an economic analysis to management for prioritization and implementation.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application)
Working knowledge of: State's network of federal and State highways; traffic control systems and their operations. **Ability to:** perform complex statistical computations such as regression analysis, forecasting, estimation and correlation, accident rates and vehicle miles of travel; interpret contract plans.

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DEPARTMENT OF TRANSPORTATION

SUPERVISOR I, ASSOCIATE ENGINEER

1) *Location Division*

Survey Section: Supervise technical staff and participate in survey activities. Provide ground control for aerial survey projects by setting control points for photogrammetric mapping in suitable positions as pre-defined in project planning; determine horizontal position of control points for aerial mapping and/or future control by measuring angles, distances or Global Position System vectors; determine vertical position of control points for aerial mapping and future control by use of precise 3-wire leveling methods; and provide written descriptions of found or set points and their location for later use. Survey boundaries by determining the position of existing property corners for establishing boundaries by tying them into known survey control, staking corners of new or existing boundaries for right-of-way acquisition or location identification. Perform conventional location surveys by cross-sectioning rivers, highways and ditches to determine elevation, grade rates and flow; locate and record positions of ground features such as fences, roads, flow lines and buildings for roadway design; stake alignment for base line for cross-sections/topographic detail.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): **Working knowledge of:** accurate field, alignment and boundary surveying procedures. **Ability to:** operate precision equipment for reliable measurements and accurate set points; locate and survey remote and rough terrain.

2) *Materials Division*

Asphalt Lab, Bituminous Design, Roadbed Aggregates, Concrete and Steel, Pavement Analysis, and Geotechnical Lab: Supervise technical staff and research activities in a unit. Supervise the performance of research and evaluation of the engineering properties of materials; analyze documents to determine applicability to the section; analyze results of research testing to establish and maintain reliable and creditable test results; prepare and conduct presentation of procedures and operations for State inspectors and testers. Analyze all test results and calculations for accuracy and completeness and perform laboratory tests to maintain proficiency and meet production deadlines. Train employees in the concepts and mechanics of testing materials and equipment usage. Ensure testing remains certified by American Association of State Highway and Transportation Officials (AASHTO) and participation with the American Materials Reference Laboratory (AMRL) program.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): **Working knowledge of:** highway construction plans and construction engineering terms; physical properties of construction materials, methods and equipment used in sampling and testing. **Ability to:** interpret mechanical drawings and specifications; write and interpret reports of test results; utilize weights and measures.

3) *Districts* - Supervise and participate in survey activities to include establishing horizontal and vertical alignment required for construction projects; slope staking; calculate drainage from field books for the staking of pipe, reinforced concrete boxes, and minor structures; establish stakeout for guardrail, dikes, fences, barrier rails, retaining walls, curbs and sidewalks, electrical, signs, and other items of work; take vertical cross-structures and various areas as needed; and perform needed construction survey activities throughout the State highway system. Perform inspection activities in asphalt production and concrete batch plants, and roadways and major structures to ensure conformance to specifications. Ensure required testing for concrete and bituminous materials and for

BENCHMARK DESCRIPTIONS
DEPARTMENT OF TRANSPORTATION

SUPERVISOR I, ASSOCIATE ENGINEER (cont'd)

3) ***Districts*** (cont'd)
base aggregates, backfill and sub-grade was performed by certified staff to ensure materials meet or exceed specifications as set forth in the contract; perform activities involved in office administration to include gathering work completed to ensure payment to the contractor; complete field books to serve as a written record of all work performed; check forms and perform routine and difficult calculations; finalize contract records by rechecking and recapping work completed in field books, columnar pads and contract files; and make as-built plans by drafting adjustments and changes.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Working knowledge of: highway construction engineering principles and their application. **Ability to:** operate survey equipment; transcribe data; determine if stakeout is required and at what stage of construction; use testing equipment to complete required test according to procedures; inspect construction to determine if standards are met; prepare documentation, reports and logs; translate field notes into drawings and specifications to accompany changes, new items of work or surveying duties.

These benchmark descriptions are used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this series.

	6.209	6.211	6.215
ESTABLISHED:	3/25/05PC	3/25/05PC	3/25/05PC